A. **Title**: Application for Permit for Scientific Purposes under the Endangered Species Act of 1973.

B. **ESA Species:** Lower Columbia River Chinook Salmon (*Oncorhynchus tshawytscha*)
Upper Willamette River Chinook Salmon (*O. tshawytscha*)
Lower Columbia River Coho Salmon (*O. kisutch*)
Columbia River Chum Salmon (*O. keta*)
Lower Columbia River Steelhead (*O. mykiss*)
Upper Willamette River Steelhead (*O. mykiss*)

C. **Date of Permit Application**: March 13, 2006

D. **Applicant Identity:** Michael Mulvey
Oregon Department of Environmental Quality
Laboratory Division, Watershed Assessment Section
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Portland, Oregon 97201
telephone (503) 229-5348
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E. **Information on Personnel, Cooperators, and Sponsors**

1. **Principal Investigator and Field Supervisor**.

Michael Mulvey, Principle Investigator
Contact information provided in Item D.

Aaron Borisenko, Field Supervisor
Oregon Department of Environmental Quality
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email: Borisenko.Aaron@DEQ.state.or.us

2. **List of field personnel**. It is not possible to provide a list of field personnel at this time. Besides Michael Mulvey and Aaron Borisenko, field personnel may include the following people.

Douglas Drake
Oregon Department of Environmental Quality

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email: Hubler.Shannon@DEQ.state.or.us

3. **Funding Source and Cooperating Intuitions**. This work is funded through the National Marine Fisheries Service, Pacific Coast Salmon Recovery Fund by the Oregon Watershed Enhancement Board, Interagency Agreement grant 206-932.

We are cooperating with a number of institutions in this proposed monitoring work and data analysis. The Oregon Watershed Enhancement Board provides funding support and program oversight. Greg Sieglitz, Oregon Plan Monitoring Coordinator, provides overall program oversight within the interagency monitoring frame work of the Oregon Plan for Salmon and Watersheds. We are also working closely with Jeff Rodgers at Oregon Department of Fish and Wildlife in planning the monitoring program and data sharing. We are working extensively with people at the US Environmental Protection Agency (EPA) Laboratory in Corvallis on a number of aspects of this monitoring work. Phil Larsen and Tony Olson are helping us with monitoring plan design and statistical analytical expertise. Robert Hughes and Phil Kaufmann are helping us with field methods and other technical issues.

In addition, we anticipate that we will be able to take advantage of data from several other studies in the Willamette conducted by EPA, the City of Salem and the Department of Environmental Quality (DEQ) that utilize the same random sampling approach and field protocols. Marlys Cappert with the EPA in Corvallis is helping us with acquiring data sets collected by other agencies. We are still compiling and scoping data from theses studies available from EPA and the City of Salem, but we anticipate that we will be able to utilize data from as many as 90 stream sites collected by other researchers in the Willamette basin in our assessment. This is in addition to data we have from approximately 180 stream surveys at randomly selected sites in the Willamette that DEQ has from earlier

Oregon Plan and other monitoring work.
Our contacts for these cooperating agencies are given below.

Marlys Cappaert
Computer Sciences Corporation
c/o U.S. Environmental Protection Agency
NHEERL/WED
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Corvallis, OR 97333
Telephone: 541-754-4467

Robert Hughes
Oregon State University
c/o US Environmental Protection Agency
National Health and Environmental Effects
Research Lab/ORD Western Ecology Division
200 S.W. 35th Street
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Phil Kaufmann
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Phil Larsen
US Environmental Protection Agency
National Health and Environmental Effects
Research Lab/ORD Western Ecology Division
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Ken Roley
City of Salem, Environmental Services
555 Liberty SE
Salem, OR 97301
Telephone: 503-588-6063

Jeff Rodgers
Oregon Department of Fish and Wildlife
Corvallis Research Lab
28655 Highway 34
Corvallis, OR 97333
Telephone: 541-757-4263 x231

Greg Sieglitz
Oregon Plan Monitoring Coordinator
Oregon Watershed Enhancement Board
775 Summer St. NE, Suite 360
Salem, OR 97301-1290
Telephone: (541) 986-0194

3. **Contractors:** The proposed activity will not be performed by a contractor.

4. **Disposition of dead specimens:** Some dead specimens may be retained in a voucher specimen collection at the DEQ Laboratory, 1712 SW 11th Avenue, Portland, OR 97201. Those not retained will be left at the collections site.

5. T**ransport and long-term holding of listed species:** We will not be transporting or long-term holding any ESA-listed species

F. **Project Description, Purpose, and Significance:** The purpose of this proposed monitoring work is to evaluate the status of the chemical, habitat, and biological integrity of stream resources in the Willamette basin important for the survival of ESA-listed salmonid species. A copy of the Interagency Agreement with the Statement of Work is attached.

1. **Justification of the objectives**: This proposed work is an extension and expansion of the Oregon Plan for Salmon and Watersheds monitoring program that started in 1998 in the Oregon Coast Coho ESU as a cooperative monitoring program of Department of Fish and Wildlife and the Department of Environmental Quality. We plan to evaluate the overall ecological health of the streams on a regional basis by evaluating vertebrate and macroinvertebrate assemblages compared to relatively unimpaired reference conditions streams.

   The Willamette basin is home to six salmon Evolutionarily Significant Units (ESUs) and steelhead Designated Population Segments (DPSs) that are listed as threatened species under the ESA. It is also home to most of the human

population of Oregon and most of the state's largest metropolitan areas. Over the past several years DEQ has conducted probabilistic and reference stream monitoring studies in these ESUs and has sampled approximately 180 wadeable streams in the Willamette ESUs as part of the Oregon Plan for Salmon and Watersheds and other monitoring efforts. This new monitoring will fill in gaps in the existing data set and allow us to more effectively assess the condition of Chinook and Steelhead habitat streams in these ESUs. We will conduct probabilistic larger stream monitoring for water quality, habitat quality and biological conditions at in areas and for stream sizes currently underrepresented in our existing data. This study will analyze the extent of water quality and habitat stressors (e.g., warm water temperature, excess fine sediment, low dissolved oxygen, non-native vertebrate species, etc) and the risk of these stressors to the biological integrity as determined by an analysis of macroinvertebrate and vertebrate communities. The information from this study will be used to guide ESA-listed species recovery planning and in limiting factor analysis.

2. **Response to Federal agency:** This proposed work is part of the Oregon Plan for Salmon and Watersheds. The Oregon Plan is the state of Oregon's response to the ESA-listing of anadromous salmonids by NOAA Fisheries. See http://www.oregon-plan.org/ for more information on the Oregon Plan. This proposed work receives Federal funds from NMFS through the Pacific Coast Salmon Recovery Fund (PCSRF). The allocation of PCSRF in Oregon is administered by the Oregon Watershed Enhancement Board. The OWEB grant 206-932 funds this work. The Interagency Funding Agreement is included in the permit application as Attachment A.

3. **Broader significance:** Besides evaluating the biological, chemical and physical condition of salmonid habitat in the Willamette basin, this monitoring work will have broader value in other applications. The DEQ has been directed by US EPA under the Clean Water Act to develop and implement numeric biological criteria for streams. This work will help us develop biological assessment tools for larger order streams and rivers. Since the data collection methods that will be used in this survey will be consistent with biological surveys conducted by DEQ and other natural resource agencies in other areas of the state, we will be able to exchange data with other agencies. This monitoring work will be valuable in DEQ's other Clean Water Act including the identification of water quality limited water bodies required under section 303D and for reporting on the overall status of the waters of the state required by section 305B.

4. **Relationship to other programs:** The proposed work is an extension and expansion of the Oregon Plan monitoring. We plan to use a sampling plan and field protocol consistent with earlier DEQ Oregon Plan monitoring in the Oregon Coast Coho ESU, Southern Oregon/Northern California Coast Coho ESU, and in

the Lower Columbia River basin of Oregon. The monitoring design and protocols are also consistent with the US EPA's Environmental Monitoring and Assessment Program stream and river monitoring. This will enable us to expand our sample size by using data collected in other monitoring work in the Willamette basin and enable us to compare our results from the Willamette to other areas.

5. **Justification for using listed species:** The proposed use of the data is for characterizing the vertebrate community using an Index of Biotic Integrity and other community-based metrics. We will also be assessing the macroinvertebrate communities of the same rivers in a similar manner, but the two community-level assessment give us different information and are not redundant. There are no alternative to using the listed species while obtaining consistent and comparable data.

G. **Project Methodology:** The vertebrate collection method we intend to use is the US EPA *Environmental Monitoring and Assessment Program –Surface Waters: Field Operations and Methods for Measuring the Ecological Conditions of Non-Wadeable Streams in Oregon* (Lazorchak, et al, 1999). The aquatic vertebrate assemblages of interest include fish and amphibians. The objective of the method is to collect a representative sample of all species present except for very rare species, provide a measure of the relative abundance of the species present, provide information on the size distribution of the species collected, and to note incidence of external pathological conditions.

1. **Duration:** The field sampling season is from the second week in June to the second week in October, 2006 and 2007. The current funding grant is for two years but subsequent grants may extend this project beyond 2007. We request that this permit be effective for five years in case we secure future funding to extend this work.

2. **Procedures and techniques:** The principle collection equipment will be a raft or boat mounted electrofisher. Wadeable rivers will be sampled using backpack electrofishers. Highly turbid waters maybe sampled by seining if electrofishing is unproductive. We anticipate that most, if not all streams would be sampled using a raft or boat mounted electrofisher. Non-wadeable sites would be sampled along the banks for a distance equal to 100 times the mean wetted channel width. Wadeable sites would be sampled for 40 times the mean wet channel width.

    a. **Method of capture and release:** The principle collection method will be a single pass with dip nets and a raft or boat mounted electrofisher. Wadeable rivers will be sampled using backpack electrofishers. Highly turbid waters maybe sampled by seining if electrofishing is unproductive. We anticipate that most, if not all streams would be sampled using a raft mounted electrofisher and dip nets. Non-wadeable sites would be sampled

along the banks for a distance equal to 100 times the mean wetted channel width. Wadeable sites would be sampled for 40 times the mean wet channel width. Collected individuals will be held briefly in a cooler, identified, length measured in a water holding tray, briefly examined for external pathology, and released. Fish will be released so as to minimize the likelihood of being recaptured. Fish will be released in the vicinity of fish cover. We will resume electrofishing a short distance down stream of the release location. We feel it is unlikely that these fish will swim down stream to be recaptured. Except for brief transfers, fish will not be held out of the water for any length of time.

It is not our intention to collect adult anadromous salmonids and we will avoid electrofishing them, if present. If one or a few adult fish are present we will avoid electrofishning that area but continue to survey other areas of the stream. If adults are too abundant or wide spread in a survey reach to avoid we will probably choose not to survey that stream at that time.

b. **Sampling schedule and locations:** The sampling period is from mid June to mid October with most work conducted during the months of July, August and September. Specific sample dates and locations are not known at this time and depend on landowner access permission and safety considerations. We anticipate approximately 5 sites per 4$^{th}$ field USGS Hydrologic Unit. There are 12 4$^{th}$ field Hydrologic Units in the Willamette basin. Length of stream surveyed is 100 times the mean wet channel width for non-wadeable streams and 40 times the wet channel width for wadeable streams. Table 1 is a candidate site list. This list has approximately 150 randomly selected candidate sites from which we propose to actually sample approximately 50 sites. The reason the candidate site list is so much larger than the number of sites we plan to survey is to account for landowner permission denials and other factors that prevent us from surveying sites.

c. **Tags:** No fish will be tagged.

d. **Drugs:** No drugs or anesthesia will be used. Fish are held very briefly and are not handled out of water. Total holding time will be less than 20 minutes. Except for brief transfers, animals will hot be handled out of water. Individuals are length measured to the nearest centimeter in water filled troughs. We measure fish length to evaluate population size range and distribution and not to exactly measure individual lengths. In situations were many individuals of the same approximate size are captured we may measure a few individuals and tally the rest. We feel that it is less stressful to the fish and decreases overall holding time to not use an anesthetic for our collection and handling methods.

e. **Holding time:** Holding time will be less than 20 minutes. The holding container is a dark colored cooler. Water will be changed frequently to ensure cool, well oxygenated water. Fish will be processed frequently to reduce stress from crowding. Animals will not be transported outside the stream reach in which they were collected.

f. **Samples taken from individuals:** No tissue samples will be collected.

3. **Possible Alternatives to Proposed Methods:**

a. **Do not collect aquatic vertebrates**. We are also collecting benthic macroinvertebrate samples at these same sites. We could rely on the macroinvertebrate species assemblage alone for assessing the ecological integrity. However, these two species assemblages do not provide redundant information about stream condition. Aquatic vertebrates and macroinvertebrate communities respond differently to different stressors. Assessing ESA-listed salmonids and their habitats are the main reasons for conducting this study and not sampling that would decrease the usefulness of the project.

b. **Use baited fish traps, nets or seines:** In some situations these may be viable or even preferred alternatives, but in many cases we anticipate there would be physical or logistical factors preventing us from using these sorts of capture methods effectively. Changing collection methods would make combining data from across several studies that used electrofishing to assess vertebrate communities difficult. Actual stress from handling the fish may be increased.

c. **Use baited hook and line fishing:** Changing collection methods would probably make combining data from across several studies that used electrofishing to assess vertebrate communities difficult. This method would be less efficient and more prone to bias in collecting a representative vertebrate sample than electrofishing. It could also be more time consuming and may not be feasible within our budget to conduct this work. This method would also be stressful to fish, especially when hooks are deeply swallowed.

d. **Electrofish less than the full survey reach:** This method calls for spreading electrofishing over a length of stream 100 channel widths long for non-wadeable streams and 40 channel width long for wadeable streams. Our experience and the experience of others using this method indicates that many instances the most abundant species will be collected when at least half of the reach length has been surveyed. Cutting the

survey stream length in half would decrease overall take by about half. Decreasing sampling effort may result in some less abundant species not being collected, especially if the habitat occupied by those species is rare. There is a danger of introducing sampling bias that would make compiling data across different projects difficult.

4. **Injury and mortality potential:** We will take steps to minimize the stress and mortality of listed fish collected in this survey and to ensure fish are taken in a humane manner. Field crews will constantly monitor the electrofisher setting and fish response to ensure that the minimum effective voltage, current, frequency and pulse width are used. Fish will be temporarily held in a dark colored chest cooler. Water in the cooler will be changed frequently to ensure cool, well oxygenated water. Handling the fish out of the water will be brief and minimal. Fish will be processed frequently to avoid stress from crowding and prolonged holding time. To minimize stress, listed fish will be processed first and returned to the river. Animals retained as voucher specimens will be anesthetized prior to preservation. No ESA-listed animals will be sacrificed for vouchers. Adult anadromous salmonids will not be targeted for collection and avoided when present.

H. **Description and Estimates of Take**:

1. **Recent Species Status and Trends:** This summary of the recent status and trends of ESU populations is taken from the Oregon Department of Fish and Wildlife *Draft of the Oregon Native Fish Status Report* dated August 2005 and accessed through the agency's web site on January 30, 2006. http://www.dfw.state.or.us/fish/ONFSR/report.asp.
The report assesses the salmon populations within Species Management Units (SMUs) for six viability criteria: extent of existing populations, accessibility of spawning habitat, abundance, productivity, reproductive independence, and hybridization. The SMUs are similar to the ESUs in geographic extent and species but also includes spawning run season and population information.

a. **Chinook Salmon:** *(Oncorhynchus tshawytscha)*

(1) Lower Columbia River Chinook ESU

(a) Fall spawning SMU consists of Clackamas and Scappoose populations. The Clackamas population failed 3 of 6 criteria. This population has been in general decline since the 1970s despite recent favorable ocean conditions. Problems noted included restricted access to historic spawning habitat and historically severe interaction with hatchery fish. Hatchery practices have recently been changed. The Scappoose population also failed 3 out of six criteria.

(b) The spring spawning SMU Clackamas population passed 4 of the 6 criteria. Low productivity, independence and historic hatchery fish interactions were noted as problems for this population.

(2) Upper Willamette River Chinook ESU

The Upper Willamette Spring Chinook SMU consists of six populations. The McKenzie population passes 5 of 6 criteria, the Molalla/Pudding and Calapooia populations pass 3 of 6 criteria, the North Santiam, South Santiam, and Upper Willamette populations pass only 2 criteria. Overall problems noted were limited access to historic spawning habitat due to many dams and other migration barriers, and a high proportion of hatchery fish. Productivity was low for all populations except for the McKenzie population.

b. **Coho Salmon:** Lower Columbia River Coho ESU *(O. kisutch).*

Early and late spawning runs in the Clackamas population met all evaluation criteria although legacy from historic competition and interaction with extensive hatchery fish is still a concern. The Scappoose population failed 2 of 6 criteria due to lack of monitoring data on abundance and productivity.

c. **Chum Salmon:** Columbia River Chum ESU *(O. keta).*

The *Oregon Native Fish Status Report* lists Clackamas and Scappoose chum salmon populations as extinct or presumed extinct. Extensive spawning surveys by ODFW in 1999-2001 found only 4 chum salmon in this ESU.

d. **Steelhead:** *(O. mykiss)*

(1) Lower Columbia River Steelhead DPS

(a) The Lower Columbia Winter Steelhead SMU has Clackamas and Scappoose populations within our proposed study area. The Clackamas population met all evaluation criteria and has relatively low levels of hatchery fish competition. The Scappoose population failed 2 out of 6 criteria for low abundance and spawner productivity.

(b) The Lower Columbia Summer Steelhead SMU consists of a Hood basin population that is outside of our proposed study area.

(2) Upper Willamette River Steelhead DPS

The Willamette Winter Steelhead SMU has 9 populations6 of the nine populations pass all evaluation criteria. The Rickreall, Upper south Santiam, North Santiam populations failed the distribution criteria due to migration barriers blocking access to historic spawning habitat. Since the early 1990s the abundance trends for east side populations have been improving. Data for west side populations was not available.

2. **Justification for Potential Mortality:** We will not be intentionally killing ESA-listed fish in this proposed work. We estimated 5% accidental mortality due to electrofishing. We anticipate actual mortality will be less.

3. **Take Estimation Method:** We anticipate approximately 3 sites per 4th field hydrologic unit per year for two years. Attachment A contains the Oregon salmon collection data from other agencies (mostly EPA) using the same equipment and methods in larger order streams as we propose using in this monitoring work. Based on these studies we anticipate that we would collect fewer than 30 individuals per listed species per site or 90 listed individuals per 4th field hydrologic unit. The annual estimated take of fish per ESU was calculated by multiplying the number of 4th field hydrologic units in the ESU times 90 fish per ESU. Indirect mortality estimate is 5% of the total number of fish. All estimates have been rounded up. The take estimates in the attached table are almost certainly higher than what we will collect in this study. These data are from the EPA Surface Water Information Management web page at https://emapsw.cor.epa.gov/sec-htdocs/index.html.

4. **US Fish and Wildlife Service ESA-listed species**: The Willamette basin has two ESA-listed fish species under the jurisdiction of the US Fish and Wildlife Service, bull trout (*Salvelinus confluentus*) and Oregon chub (*Oregonichthys crameri*). Willamette basin bull trout are found in cold water streams in the upper McKenzie and upper Middle Fork Willamette basins. It is unlikely that we will have sites in current bull trout habitat in this proposed monitoring work. We will evaluate our site list relative to known bull trout habitat. Oregon chub inhabit slack water, off-channel areas such as beaver ponds, wetlands and sloughs. These habitats have been greatly reduced in the Willamette basin. While it is very unlikely that we will collect any Oregon chub we will evaluate site locations with ODFW and USFWS to see if they are in or near known Oregon chub habitat or populations. US Fish and Wildlife Service issued to DEQ ESA section 10 permit TE012136-2, expiration May 31, 2008, for collecting resident ESA listed fish species.

I. **Transportation and Holding of Listed Species:** Not applicable. We are not transporting fish outside of the survey reach were they were collected. We will not hold fish for longer than approximately 20 minutes.

J. **Cooperative Breeding Program:** We are willing to participate in a cooperative breeding program and to maintain or contribute data to a breeding program, if such action is requested and does not unduly interfere with our monitoring work.

K. **Previous or Concurrent Activities Involving Listed Species**:

1. **Previous Permits for collecting federally listed species.**

| Agency | ESA Permit Type | Permit Number | Time Period | Species |
|---|---|---|---|---|
| US Fish and Wildlife Service | Section 10 | TE012136-0 | 8/24/1999 to 8/26/2000 | Bull trout *(Salvelinus confluentus)*, Oregon chub *(Oregonichthys crameri)* |
| US Fish and Wildlife Service | Section 10 | TE012136-1 | 11/06/2000 to 11/05/2004 | Bull trout *(Salvelinus confluentus)*, Oregon chub *(Oregonichthys crameri)*, Warner sucker *(Catostomus warnerensis)*, Lost River sucker *(Deltistes luxatus)*, shortnose sucker *(Chasmistes brevirostris)* |
| US Fish and Wildlife Service | Section 10 | TE012136-2 | 6/01/2004 to 5/31/2008 | Bull trout *(Salvelinus confluentus)*, Oregon chub *(Oregonichthys crameri)*, Warner sucker *(Catostomus warnerensis)*, Lost River sucker *(Deltistes luxatus)*, shortnose sucker *(Chasmistes brevirostris)* |

**Previous Permits for collecting federally listed species, continued.**

| Agency | ESA Permit Type | Permit Number | Time Period | Species |
|---|---|---|---|---|
| National Marine Fisheries Service | Section 10 | 1205 | 1999 to 2002<br>2003 to 2007 | Snake River fall Chinook salmon *(Oncorhynchus tshawytscha)*, Snake River spring/summer Chinook salmon *(O. tshawytscha)*, Southern Oregon/Northern California Coast coho salmon *(O. kisutch)* |
| Oregon Department of Fish and Wildlife | Section 4D | OR2002-122 | 2002 | Oregon Coast coho salmon *(O. kisutch)*, Southern Oregon/Northern California Coast coho salmon *(O. kisutch)* |
| Oregon Department of Fish and Wildlife | Section 4D | OR2002-297 | 2002 | Upper Willamette River steelhead *(O. mykiss)* |
| Oregon Department of Fish and Wildlife | Section 4D | OR2002-302 | 2002 | Middle Columbia River steelhead *(O. mykiss)* |
| Oregon Department of Fish and Wildlife | Section 4D | OR2002-326 | 2002 | Oregon Coast coho salmon *(O. kisutch)*, Southern Oregon/Northern California Coast coho salmon *(O. kisutch, )*, Upper Willamette River steelhead *(O. mykiss)* |
| Oregon Department of Fish and Wildlife | Section 4D | OR2003-784 | 2003 | Middle Columbia River steelhead *(O. mykiss)*, Columbia river bull trout *(Salvelinus confluentus)*, Snake River basin steelhead *(O. mykiss)* |
| Oregon Department of Fish and Wildlife | Section 4D | OR2003-879 | 2003 | Oregon Coast coho salmon *(O. kisutch)*, Southern Oregon/Northern California Coast coho salmon *(O. kisutch, )*, Upper Willamette River steelhead *(O. mykiss)*, *Columbia River b*ull trout *(Salvelinus confluentus)*, Oregon chub *(Oregonichthys crameri)*, Upper Willamette River chinook *(O. tshawytscha)*, Lower Columbia River chinook *(O. tshawytscha), )*, Lower Columbia River coho *(O. kiustch), )*, Lower Columbia River steelhead *(O. mykiss)*,olumbia River chum *(O. keta)* |

**Previous Permits for collecting federally listed species, continued.**

| Agency | ESA Permit Type | Permit Number | Time Period | Species |
|---|---|---|---|---|
| Oregon Department of Fish and Wildlife | Section 4D | OR2003-989 | 2003 | Oregon Coast coho salmon *(O. kisutch)*, Southern Oregon/Northern California Coast coho salmon *(O. kisutch, )*, Upper Willamette River steelhead *(O. mykiss)*, Lower Columbia River coho *(O. kiustch), )*, Lower Columbia River steelhead *(O. mykiss)*, Middle Columbia River steelhead *(O. mykiss)*, Snake River basin steelhead *(O, mykiss)* |
| Oregon Department of Fish and Wildlife | Section 4D | OR2004-1540 | 2004 | Oregon Coast coho salmon *(O. kisutch)*, Southern Oregon/Northern California Coast coho salmon *(O. kisutch, )*, Upper Willamette River steelhead *(O. mykiss)*, *Columbia River b*ull trout *(Salvelinus confluentus)*, Klamath River bull trout *(Salvelinus confluentus)*, Oregon chub *(Oregonichthys crameri)*, Upper Willamette River chinook *(O. tshawytscha)*, Lower Columbia River chinook *(O. tshawytscha), )*, Lower Columbia River coho *(O. kiustch), )*, Lower Columbia River steelhead *(O. mykiss)*, Columbia River chum *(O. keta)*, Lost River sucker *(Deltistes luxatus)*, shortnose sucker *(Chasmistes brevirostris)* |
| Oregon Department of Fish and Wildlife | Section 4D | OR2005-2220 | 2005 | Oregon Coast coho salmon *(O. kisutch)*, Southern Oregon/Northern California Coast coho salmon *(O. kisutch, )*, Upper Willamette River steelhead *(O. mykiss)* |
| Oregon Department of Fish and Wildlife | Section 4D | OR2005-2697 | 2005 | Lower Columbia River steelhead *(O. mykiss)* |

a. **Take and mortality events for the last five years for federally-listed species are presented in the tables below.** Cause of mortality was usually stress or injury from electrofishing. When fish mortality was observed the field crews adjusted electrofisher settings, collection techniques, and fish holding and processing to reduce and eliminate mortalities. They would also re-check the water temperature to see if it was nearing the threshold in the NMFS Electrofishing Guidelines. These measures were generally effective in reducing mortality. Listing Unit abbreviations are on page 12.

**4D Permit 2002-122: Oregon Plan for Salmon and Watersheds, Probabilistic sites survey**

| Sub Basin (4th Field HUC) | Species | Scientific Name | Listing Unit | Take | Mortality |
|---|---|---|---|---|---|
| Necanicum | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 1 | 0 |
| Sixes | Salmon, Coho | *Oncorhynchus kisutch* | SONCC * | 1 | 1 |
| Wilson-Trask-Nestucca | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 36 | 3 |
| Siuslaw | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 4 | 0 |
| Umpqua | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 46 | 6 |
| Nehalem | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 52 | 4 |
| Applegate | Salmon, Coho | *Oncorhynchus kisutch* | SONCC | 72 | 4 |
| South Umpqua | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 75 | 7 |
| Alsea | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 81 | 7 |
| Coquille | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 87 | 3 |
| Coos | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 90 | 6 |

* This should be OCC not SONCC.

**4D Permit 2002-297: Oregon Plan for Salmon and Watersheds, Willamette Valley reference site survey: No ESA listed fish collected.**

**4D Permit 2002-302: Environmental Monitoring and Assessment Program, John Day and Lower Deschutes basin**

| Sub Basin (4th Field HUC) | Species | Scientific Name | Listing Unit | Take | Mortality |
|---|---|---|---|---|---|
| Upper John Day | Steelhead | *Oncorhynchus mykiss* | MCRS | 72 | 1 |
| North Fork John Day | Steelhead | *Oncorhynchus mykiss* | MCRS | 68 | 8 |
| Middle Fork John Day | Steelhead | *Oncorhynchus mykiss* | MCRS | 83 | 1 |
| Lower John Day | Steelhead | *Oncorhynchus mykiss* | MCRS | 483 | 24 |

**4D Permit 2002-326: Environmental Monitoring and Assessment Program, State-wide stream monitoring**

| Sub Basin (4th Field HUC) | Species | Scientific Name | Listing Unit | Take | Mortality |
|---|---|---|---|---|---|
| Coos | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 3 | 0 |
| Wilson-Trask-Nestucca | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 62 | 3 |
| Siuslaw | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 9 | 0 |

**4D Permit 2003-784: Regional Stream Condition and Stressor Evaluation Survey**

| Sub Basin (4th Field HUC) | Species | Scientific Name | Listing Unit | Take | Mortality |
|---|---|---|---|---|---|
| Upper John Day | Steelhead | *Oncorhynchus mykiss* | MCRS | 41 | 4 |
| North Fork John Day | Steelhead | *Oncorhynchus mykiss* | MCRS | 53 | 4 |
| Middle Fork John Day | Steelhead | *Oncorhynchus mykiss* | MCRS | 88 | 2 |

**4D Permit 2003-879: Oregon Plan for Salmon and Watersheds**

| Sub Basin (4th Field HUC) | Species | Scientific Name | Listing Unit | Take | Mortality |
|---|---|---|---|---|---|
| Mid Columbia-Hood (Scott Canyon) | Salmon, Chinook | *Oncorhyncus tshawytscha* | LCR Chinook | 24 | 0 |
| Siletz-Yaquina | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 23 | 3 |
| Necanicum | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 20 | 2 |
| Nehalem | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 96 | 8 |
| Siuslaw | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 102 | 0 |
| South Umpqua | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 109 | 6 |
| Umpqua | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 64 | 1 |
| Applegate | Salmon, Coho | *Oncorhynchus kisutch* | SONCC | 12 | 1 |
| Lower Columbia-Clatskanie | Salmon, Coho | *Oncorhynchus kisutch* | LCR Coho | 8 | 1 |
| Lower Willamette (Clackamas) | Salmon, Coho | *Oncorhynchus kisutch* | LCR Coho | 2 | 0 |
| Wilson-Trask-Nestucca | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 184 | 6 |
| Alsea | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 14 | 2 |
| South Santiam | Steelhead | *Oncorhynchus mykiss* | UWRS | 130 | 15 |
| Upper Willamette | Steelhead | *Oncorhynchus mykiss* | UWRS | 28 | 3 |
| Lower Columbia-Sandy | Steelhead | *Oncorhynchus mykiss* | LCRS | 65 | 4 |
| Lower Willamette (Clackamas) | Steelhead | *Oncorhynchus mykiss* | LCRS | 149 | 5 |
| Lower Willamette (Scappoose) | Steelhead | *Oncorhynchus mykiss* | LCRS | 1 | 0 |
| Mid Columbia-Hood (Scott Canyon) | Steelhead | *Oncorhynchus mykiss* | LCRS | 138 | 6 |

**4D Permit 2003-989: Environmental Monitoring and Assessment Program**

| Sub Basin (4th Field HUC) | Species | Scientific Name | Listing Unit | Take | Mortality |
|---|---|---|---|---|---|
| Lower Willamette (Clackamas) | Steelhead | *Oncorhynchus mykiss* | LCRS | 10 | 1 |
| Lower John Day | Steelhead | *Oncorhynchus mykiss* | MCRS | 2 | 0 |
| Middle Fork John Day | Steelhead | *Oncorhynchus mykiss* | MCRS | 90 | 2 |
| Upper John Day | Steelhead | *Oncorhynchus mykiss* | MCRS | 40 | 3 |

**4D Permit 2004-1540: Oregon Plan for Salmon and Watersheds**

| Sub Basin (4th Field HUC) | Species | Scientific Name | Listing Unit | Take | Mortality |
|---|---|---|---|---|---|
| Lower Columbia-Clatskanie | Salmon, Coho | *Oncorhynchus kisutch* | LCR Coho | 8 | 1 |
| Lower Columbia-Youngs | Salmon, Coho | *Oncorhynchus kisutch* | LCR Coho | 3 | 0 |
| Lower Columbia-Clatskanie | Steelhead | *Oncorhynchus mykiss* | LCRS | 8 | 0 |
| Lower Columbia-Sandy | Steelhead | *Oncorhynchus mykiss* | LCRS | 41 | 0 |
| Lower Columbia-Youngs | Steelhead | *Oncorhynchus mykiss* | LCRS | 1 | 0 |
| Lower Willamette (Clackamas) | Steelhead | *Oncorhynchus mykiss* | LCRS | 4 | 0 |
| Mid Columbia-Hood (Scott Canyon) | Steelhead | *Oncorhynchus mykiss* | LCRS | 67 | 2 |
| Alsea | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 4 | 0 |
| South Umpqua | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 1 | 0 |
| Umpqua | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 1 | 0 |
| Wilson-Trask-Nestucca | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 40 | 0 |
| South Santiam | Steelhead | *Oncorhynchus mykiss* | UWRS | 6 | 0 |

**4D 2005-2220: Oregon Plan for Salmon and Watersheds, Annual Trending Sites**

| Sub Basin (4th Field HUC) | Species | Scientific Name | Listing Unit | Take | Mortality |
|---|---|---|---|---|---|
| South Santiam | Steelhead | *Oncorhynchus mykiss* | UWRS | 14 | 1 |
| Wilson-Trask-Nestucca | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 16 | 1 |
| Wilson-Trask-Nestucca | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 36 | 5 |
| Alsea | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 5 | 0 |
| Umpqua | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 9 | 0 |
| South Umpqua | Salmon, Coho | *Oncorhynchus kisutch* | OCC | 18 | 1 |

**4D Permit 2005-2697: Johnson Creek Toxics Evaluation Project (JCTEP)**

| Sub Basin (4th Field HUC) | Species | Scientific Name | Listing Unit | Take | Mortality |
|---|---|---|---|---|---|
| Lower Willamette-Scappoose | Steelhead | *Oncorhynchus mykiss* | LCRS | 1 | 0 |

**USFWS Section 10 Permit TE 012136-1 (11/6/200 to 11/5/2004)and TE012136-2 (6/1/2004 to 5/31/2008)**

| Sub Basin | Year | Species | Scientific Name | Listing Unit | Take | Mortality |
|---|---|---|---|---|---|---|
| North Fork John Day | 2001 | Bull Trout | *Salvelinus confluentus* | JDBT | 1 | 0 |
| Middle Fork John Day | 2002 | Bull Trout | *Salvelinus confluentus* | JDBT | 2 | 0 |
| none | 2003 | none | | | | |
| none | 2004 | none | | | | |
| none | 2005 | none | | | | |

**NMFS Section 10 Permit 1205**

| Sub Basin | Year | Species | Scientific Name | Listing Unit | Take | Mortality |
|---|---|---|---|---|---|---|
| none | 2001 | none | | | | |
| Lower Rogue | 2002 | Salmon, Coho | *Oncorhynchus kisutch* | SONCC | 112 | 2 |
| Applegate | 2002 | Salmon, Coho | *Oncorhynchus kisutch* | SONCC | 72 | 4 |
| Applegate | 2003 | Salmon, Coho | *Oncorhynchus kisutch* | SONCC | 12 | 1 |
| none | 2004 | | | | | |
| none | 2005 | | | | | |

Listing Unit Abbreviations

OCC=Oregon Coast Coho Salmon ESU (NMFS not listed 01/17/06)
SONCC=Southern Oregon/Northern California Coasts Coho Salmon ESU (NMFS Threatened)
MCRS=Middle Columbia River Steelhead ESU (NMFS Threatened)
UWRS=Upper Willamette River Steelhead ESU (NMFS Threatened)
LCR Coho=Lower Columbia River Coho Salmon ESU (NMFS Threatened)
LCRS=Lower Columbia River Steelhead ESU (NMFS Threatened)
LCR Chinook= Lower Columbia River Chinook Salmon ESU (NMFS Threatened)
JDBT=John Day Bull Trout

L. **Certification:**

"I hereby certify that the foregoing information is complete, true and correct to the best of my knowledge and belief. I understand this information is submitted for the purpose of obtaining a permit under the Endangered Species Act of 1973 (ESA) and regulations promulgated thereunder, and that any false statement may subject me to the criminal penalties of 18 U.S.C. 1001, or to penalties under the ESA."

_____ _____

Signature Date

Michael Mulvey, Oregon Plan Monitoring Coordinator for DEQ

## Anticipated Annual Take

Applicant: Michael Mulvey, Oregon Department of Environmental Quality  Location/Project: Oregon Plan Willamette Basin ESUs Study

| Number of individuals | Species and/or Population and/or ESU | Life Stage[1] | Sex[2] | Origin[3] | Take Activity Category[4] | Location[5] | Date(s)[6] | Details |
|---|---|---|---|---|---|---|---|---|
| 120 | Lower Columbia River Chinook ESU | **juvenile** | **N/A** | wild | **Capture, measure, release** | See attached list, Table 1 | **June-October** | |
| 6 | Lower Columbia River Chinook ESU | **juvenile** | **N/A** | wild | **Capture, measure, indirect mortality** | " | **June-October** | |
| 10 | Lower Columbia River Chinook ESU | **adult** | **N/A** | wild | **Accidental electrofishing, release** | " | **June-October** | Adults will be avoided when present |
| 940 | Upper Willamette River Chinook ESU | **juvenile** | **N/A** | wild and non-fin clipped hatchery | **Capture, measure, release** | " | **June-October** | |
| 47 | Upper Willamette River Chinook ESU | **juvenile** | **N/A** | wild and non-fin clipped hatchery | **Capture, measure, indirect mortality** | " | **June-October** | |
| 10 | Upper Willamette River Chinook ESU | **adult** | **N/A** | wild and non-fin clipped hatchery | **Accidental electrofishing, release** | " | **June-October** | Adults will be avoided when present |
| 80 | Upper Willamette River Chinook ESU | **juvenile** | **N/A** | fin clipped hatchery | **Capture, measure, release** | " | **June-October** | 7 sub basins with hatchery fish |
| 4 | Upper Willamette River Chinook ESU | **juvenile** | **N/A** | fin clipped hatchery | **Capture, measure, indirect mortality** | " | **June-October** | |
| 10 | Upper Willamette River Chinook ESU | **adult** | **N/A** | fin clipped hatchery | **Accidental electrofishing, release** | " | **June-October** | Adults will be avoided when present |
| 170 | Lower Columbia River Coho ESU | **juvenile** | **N/A** | wild | **Capture, measure, release** | " | **June-October** | |
| 8 | Lower Columbia River Coho ESU | **juvenile** | **N/A** | wild | **Capture, measure, indirect mortality** | " | **June-October** | |

| Number of individuals | Species and/or Population and/or ESU | Life Stage[1] | Sex[2] | Origin[3] | Take Activity Category[4] | Location[5] | Date(s)[6] | Details |
|---|---|---|---|---|---|---|---|---|
| 10 | Lower Columbia River Coho ESU | **adult** | **N/A** | Wild and non-fin clipped hatchery | **Accidental electrofishing, release** | " | **June-October** | Adults will be avoided when present |
| 20 | Lower Columbia River Coho ESU | **juvenile** | **N/A** | fin clipped hatchery | **Capture, measure, release** | | **June-October** | |
| 1 | Lower Columbia River Coho ESU | **juvenile** | **N/A** | fin clipped hatchery | **Capture, measure, indirect mortality** | | **June-October** | |
| 5 | Lower Columbia River Coho ESU | **adult** | **N/A** | fin clipped hatchery | **Accidental electrofishing, release** | | **June-October** | Adults will be avoided when present |
| 20 | Columbia River Chum ESU | **juvenile** | **N/A** | wild | **Capture, measure, release** | " | **June-October** | |
| 1 | Columbia River Chum ESU | **juvenile** | **N/A** | wild | **Capture, measure, indirect mortality** | " | **June-October** | |
| 1 | Columbia River Chum ESU | **adult** | **N/A** | wild | Accidental electrofishing, release | | **June-October** | Adults will be avoided when present |
| 170 | Lower Columbia River Steelhead DPS | **juvenile** | **N/A** | Wild and non-fin clipped hatchery | **Capture, measure, release** | " | **June-October** | |
| 8 | Lower Columbia River Steelhead DPS | **juvenile** | **N/A** | Wild and non-fin clipped hatchery | **Capture, measure, indirect mortality** | " | **June-October** | |
| 10 | Lower Columbia River Steelhead DPS | **adult** | **N/A** | Wild and non-fin clipped hatchery | **Accidental electrofishing, release** | " | **June-October** | Adults will be avoided when present |
| 20 | Lower Columbia River Steelhead PDS | **juvenile** | **N/A** | Fin clipped hatchery | **Capture, measure, release** | " | **June-October** | |
| 1 | Lower Columbia River Steelhead DPS | **juvenile** | **N/A** | Fin clipped hatchery | **Capture, measure, indirect mortality** | " | **June-October** | |
| 5 | Lower Columbia River Steelhead DPS | **adult** | **N/A** | Fin clipped hatchery | **Accidental electrofishing, release** | " | **June-October** | Adults will be avoided when present |

| Number of individuals | Species and/or Population and/or ESU | Life Stage[1] | Sex[2] | Origin[3] | Take Activity Category[4] | Location[5] | Date(s)[6] | Details |
|---|---|---|---|---|---|---|---|---|
| 660 | Upper Willamette River Steelhead DPS | juvenile | N/A | Wild and non-fin clipped hatchery | Capture, measure, release | " | June-October | |
| 33 | Upper Willamette River Steelhead PDS | juvenile | N/A | Wild and non-fin clipped hatchery | Capture, measure, indirect mortality | " | June-October | |
| 10 | Upper Willamette River Steelhead PDS | adult | N/A | Wild and non-fin clipped hatchery | Accidental electrofishing, release | " | June-October | Adults will be avoided when present |

1. Such as: post-hatchling, fry, smolt, juvenile, immature, adult, etc. (also note if live or dead)
2. If known
3. If applicable, note if the species to be taken are naturally-produced (wild) or artificially-propagated (hatchery).
4. Such as observe/harass; collect for transport (including rescue/salvage); capture, handle, and release; capture, handle, tag, mark, tissue sample, and/or other invasive procedure, and release; intentional lethal take (direct mortality); unintentional lethal take (indirect mortality); removal (e.g., for broodstock collection); Other take (specify).
5. If more specific than project as a whole.
6. If more specific than project as a whole.

**Table 1. Candidate Site List. Approximately 50 of the 150 candidate sites will be surveyed.**

| Site ID | Name | Stream Order | Township/Range | County | Longitude | Latitude | WATERSHED_ | HUC |
|---|---|---|---|---|---|---|---|---|
| ORWU06-0003 | Row River | 5 | 2.00S 2.00E19 | LANE | -123.0243 | 43.79046 | ROW RIVER | 170900020105 |
| ORWU06-0050 | Silk Creek | 3 | 2.00S 5.00W26 | LANE | -123.07628 | 43.79732 | UPPER COAST FORK WILLAMETTE RIVER | 170900020306 |
| ORWU06-0011 | Coast Fork Willamette River | 1 | 2.00S 2.00W23 | LANE | -123.02406 | 44.02162 | LOWER COAST FORK WILLAMETTE RIVER | 170900020505 |
| ORWU06-0087 | Amazon Creek Diversion Channel | 1 | 2.00S 4.00E 9 | LANE | -123.20359 | 44.06578 | LONG TOM RIVER | 170900030107 |
| ORWU06-0060 | Willow Creek | 1 | 2.00S 1.00E15 | LANE | -123.17668 | 44.03355 | LONG TOM RIVER | 170900030107 |
| ORWU06-0074 | Amazon Creek tributary Enid Station Road Santa Clara | 1 | 2.00S 1.00E 8 | LANE | -123.17473 | 44.11758 | LONG TOM RIVER | 170900030108 |
| ORWU06-0018 | Shafer Creek | 1 | 2.00S 3.00W11 | BENTON | -123.29706 | 44.31025 | LONG TOM RIVER | 170900030110 |
| ORWU06-0076 | McKenzie River tributary Gilham Road Springfield | 1 | 2.00S 4.00W15 | LANE | -123.07899 | 44.1118 | MUDDY CREEK | 170900030201 |
| ORWU06-0052 | Willamette River | 7 | 2.00S 3.00E14 | LANE | -123.05791 | 44.04673 | MUDDY CREEK | 170900030201 |
| ORWU06-0027 | Willamette River tributary near Northkenzie Road Springfield | 0 | 2.00S 2.00W18 | LANE | -123.08662 | 44.08101 | MUDDY CREEK | 170900030201 |
| ORWU06-0006 | Patterson Slough | 0 | 2.00S 5.00W23 | LANE | -123.06009 | 44.06164 | MUDDY CREEK | 170900030201 |
| ORWU06-0065 | Willamette River | 7 | 1.00S 3.00E35 | BENTON | -123.2547 | 44.55342 | MUDDY CREEK | 170900030209 |
| ORWU06-0002 | Jackson Creek | 0 | 1.00S 3.00E20 | BENTON | -123.27645 | 44.61389 | MUDDY CREEK | 170900030209 |
| ORWU06-0046 | Calapooia River | 3 | 2.00S 4.00E 5 | LINN | -122.99023 | 44.39304 | CALAPOOIA RIVER | 170900030305 |

| Site ID | Name | Stream Order | Township/Range | County | Longitude | Latitude | WATERSHED_ | HUC |
|---|---|---|---|---|---|---|---|---|
| ORWU06-0099 | Oak Creek tributary Looney Drive Albany | 2 | 1.00S 4.00E35 | LINN | -123.11299 | 44.5697 | OAK CREEK | 170900030402 |
| ORWU06-0062 | Oak Creek tributary Albany | 2 | 1.00S 1.00E31 | LINN | -123.12506 | 44.59615 | OAK CREEK | 170900030402 |
| ORWU06-0082 | Lake Creek tributary Tagent | 1 | 2.00S 6.00W11 | LINN | -123.09795 | 44.53906 | OAK CREEK | 170900030403 |
| ORWU06-0069 | Burkhart Creek | 2 | 1.00S 2.00E28 | LINN | -123.03907 | 44.64066 | OAK CREEK | 170900030404 |
| ORWU06-0009 | Periwinkle Creek | 1 | 2.00S 5.00W 5 | LINN | -123.06219 | 44.61064 | OAK CREEK | 170900030404 |
| ORWU06-0089 | Marys River tributary Philomath | 1 | 2.00S 3.00W 6 | BENTON | -123.34549 | 44.53643 | MARYS RIVER | 170900030504 |
| ORWU06-0040 | Marys River tributary near Goodnight Ave Corvallis | 1 | 2.00S 2.00W 6 | BENTON | -123.27064 | 44.53545 | MARYS RIVER | 170900030511 |
| ORWU06-0020 | Dunawi Creek | 2 | 2.00S 4.00W 2 | BENTON | -123.29222 | 44.55027 | MARYS RIVER | 170900030511 |
| ORWU06-0039 | Willamette River side channel near Eugene | 0 | 2.00S 5.00W15 | LANE | -123.09657 | 44.12327 | LOWER MCKENZIE RIVER | 170900040706 |
| ORWU06-0041 | North Santiam River | 4 | 2.00S 5.00W 8 | MARION | -122.15998 | 44.73539 | DETROIT RESERVOIR/BLOW OUT DIVIDE CREEK | 170900050303 |
| ORWU06-0090 | North Santiam River | 5 | 1.00S 3.00W31 | LINN | -122.42968 | 44.75385 | MIDDLE NORTH SANTIAM RIVER | 170900050402 |
| ORWU06-0055 | North Santiam River | 5 | 1.00S 5.00W36 | MARION | -122.47522 | 44.75384 | MIDDLE NORTH SANTIAM RIVER | 170900050404 |
| ORWU06-0024 | Peters Ditch | 1 | 1.00S 3.00E23 | LINN | -122.85197 | 44.69965 | THOMAS CREEK | 170900060305 |
| ORWU06-0070 | Mill Creek | 4 | 1.00S 4.00W22 | MARION | -122.94844 | 44.84387 | MILL CREEK/WILLAMETTE RIVER | 170900070104 |
| ORWU06-0016 | Mill Creek | 0 | 1.00S 1.00W18 | MARION | -122.97749 | 44.88727 | MILL CREEK/WILLAMETTE RIVER | 170900070104 |

| Site ID | Name | Stream Order | Township/Range | County | Longitude | Latitude | WATERSHED_ | HUC |
|---|---|---|---|---|---|---|---|---|
| ORWU06-0084 | Rickreall Creek tributary Dallas | 1 | 1.00N 3.00E25 | POLK | -123.34089 | 44.92657 | RICKREALL CREEK | 170900070203 |
| ORWU06-0036 | Rickreal Creek tributary Dallas | 1 | 1.00N 4.00W36 | POLK | -123.34187 | 44.93599 | RICKREALL CREEK | 170900070203 |
| ORWU06-0079 | Willamette River | 8 | 1.00S 3.00E 9 | MARION | -123.18072 | 44.85794 | RICKREALL CREEK | 170900070206 |
| ORWU06-0066 | Ash Creek | 2 | 1.00S 4.00W16 | POLK | -123.21165 | 44.85634 | RICKREALL CREEK | 170900070207 |
| ORWU06-0094 | Mill Creek tributary Reed Road Salem | 1 | 1.00S 2.00W15 | MARION | -123.01193 | 44.8942 | WILLAMETTE RIVER/CHEHALEM CREEK | 170900070301 |
| ORWU06-0080 | Willamette River | 8 | 1.00S 1.00E 3 | POLK | -123.06952 | 44.93122 | WILLAMETTE RIVER/CHEHALEM CREEK | 170900070301 |
| ORWU06-0057 | Mission Ditch | 0 | 1.00S 1.00W 9 | MARION | -123.00801 | 44.92192 | WILLAMETTE RIVER/CHEHALEM CREEK | 170900070301 |
| ORWU06-0047 | Pringle Creek tributary Salem | 1 | 1.00S 3.00W18 | MARION | -123.00969 | 44.90261 | WILLAMETTE RIVER/CHEHALEM CREEK | 170900070301 |
| ORWU06-0031 | Clark Creek in Salem | 1 | 1.00S 2.00W 9 | MARION | -123.03498 | 44.9203 | WILLAMETTE RIVER/CHEHALEM CREEK | 170900070301 |
| ORWU06-0021 | Croisan Creek | 1 | 1.00S 3.00W17 | MARION | -123.08553 | 44.8772 | WILLAMETTE RIVER/CHEHALEM CREEK | 170900070301 |
| ORWU06-0095 | Lake Labish Ditch | 0 | 1.00N 4.00W33 | MARION | -123.00597 | 45.01729 | WILLAMETTE RIVER/CHEHALEM CREEK | 170900070302 |
| ORWU06-0088 | Claggett Creek | 1 | 1.00N 1.00E34 | MARION | -122.98424 | 44.98041 | WILLAMETTE RIVER/CHEHALEM CREEK | 170900070302 |

| Site ID | Name | Stream Order | Township/Range | County | Longitude | Latitude | WATERSHED_ | HUC |
|---|---|---|---|---|---|---|---|---|
| ORWU06-0083 | Winsolow Gultch tributary West Salem | 1 | 1.00N 1.00W36 | POLK | -123.11004 | 44.9565 | WILLAMETTE RIVER/CHEHALEM CREEK | 170900070302 |
| ORWU06-0071 | Claggett Creek Tributary Salem | 1 | 1.00S 1.00W 6 | MARION | -122.97757 | 44.96542 | WILLAMETTE RIVER/CHEHALEM CREEK | 170900070302 |
| ORWU06-0049 | Claggett Creek | 2 | 1.00S 6.00W 2 | MARION | -123.01483 | 44.99041 | WILLAMETTE RIVER/CHEHALEM CREEK | 170900070302 |
| ORWU06-0010 | Claggett Creek | 2 | 1.00N 2.00E31 | MARION | -123.00158 | 44.97628 | WILLAMETTE RIVER/CHEHALEM CREEK | 170900070302 |
| ORWU06-0081 | Willamette River tributary near Dundee | 1 | 1.00N 4.00W22 | YAMHILL | -122.99727 | 45.26683 | WILLAMETTE RIVER/CHEHALEM CREEK | 170900070307 |
| ORWU06-0056 | Seely Ditch tributary Wilsonville | 1 | 1.00N 3.00W19 | CLACKAMAS | -122.77054 | 45.31255 | ABERNETHY CREEK | 170900070402 |
| ORWU06-0048 | Willamette River tributary near Wilsonville Rd Wilsonville | 1 | 1.00N 1.00W19 | CLACKAMAS | -122.74653 | 45.31451 | ABERNETHY CREEK | 170900070402 |
| ORWU06-0044 | Willamette River | 8 | 1.00N 5.00W28 | CLACKAMAS | -122.75406 | 45.29614 | ABERNETHY CREEK | 170900070402 |
| ORWU06-0030 | Tour Creek | 0 | 1.00N 5.00W20 | CLACKAMAS | -122.57468 | 45.36433 | ABERNETHY CREEK | 170900070404 |
| ORWU06-0012 | Abernethy Creek | 3 | 1.00N 1.00W16 | CLACKAMAS | -122.59261 | 45.36259 | ABERNETHY CREEK | 170900070404 |
| ORWU06-0022 | Baker Creek | 3 | 1.00N 5.00W19 | YAMHILL | -123.22451 | 45.23119 | NORTH YAMHILL RIVER | 170900080606 |
| ORWU06-0029 | North Yamhill River | 5 | 1.00N 2.00W19 | YAMHILL | -123.15459 | 45.23189 | NORTH YAMHILL RIVER | 170900080608 |
| ORWU06-0014 | Silver Creek | 4 | 1.00S 3.00W 2 | MARION | -122.79158 | 45.00967 | ABIQUA CREEK/PUDDING RIVER | 170900090105 |
| ORWU06-0017 | Little Pudding River tributary | 1 | 1.00S 1.00W11 | MARION | -122.95639 | 44.9276 | ABIQUA CREEK/PUDDING RIVER | 170900090108 |

| Site ID | Name | Stream Order | Township/Range | County | Longitude | Latitude | WATERSHED_ | HUC |
|---|---|---|---|---|---|---|---|---|
| ORWU06-0097 | Mill Creek | 1 | 1.00N 2.00E30 | MARION | -122.85325 | 45.13771 | SENECAL CREEK/MILL CREEK | 170900090402 |
| ORWU06-0100 | McKay Creek tributary Hillsboro | 1 | 4.00N 2.00W 7 | WASHINGTON | -122.91337 | 45.56244 | DAIRY CREEK | 170900100107 |
| ORWU06-0073 | McKay Creek | 4 | 4.00N 3.00W15 | WASHINGTON | -123.00099 | 45.53605 | DAIRY CREEK | 170900100107 |
| ORWU06-0054 | McKay Creek tributary Helvetia Rd West Union | 1 | 4.00N 2.00W 5 | WASHINGTON | -122.91382 | 45.57379 | DAIRY CREEK | 170900100107 |
| ORWU06-0005 | Council Creek | 1 | 4.00N 3.00W16 | WASHINGTON | -123.02337 | 45.53102 | DAIRY CREEK | 170900100108 |
| ORWU06-0043 | Gales Creek | 3 | 4.00N 1.00W 8 | WASHINGTON | -123.11846 | 45.51435 | GALES CREEK | 170900100203 |
| ORWU06-0092 | Rock Creek tributary Hillsboro | 1 | 3.00N 2.00W10 | WASHINGTON | -122.95125 | 45.51077 | ROCK CREEK/TUALATIN RIVER | 170900100401 |
| ORWU06-0063 | Tualitin River tributary near SW Miller Hill Road Hillsboro | 1 | 3.00N 2.00W33 | WASHINGTON | -122.88342 | 45.46287 | ROCK CREEK/TUALATIN RIVER | 170900100401 |
| ORWU06-0023 | Tualitin River tributary near SW Carlin and 207 Ave Hillsboro | 1 | 3.00N 1.00W26 | WASHINGTON | -122.8911 | 45.47164 | ROCK CREEK/TUALATIN RIVER | 170900100401 |
| ORWU06-0078 | Rock Creek | 3 | 4.00N 3.00W23 | WASHINGTON | -122.87864 | 45.55215 | ROCK CREEK/TUALATIN RIVER | 170900100402 |
| ORWU06-0068 | Rock Creek | 3 | 3.00N 3.00W 6 | WASHINGTON | -122.90048 | 45.52759 | ROCK CREEK/TUALATIN RIVER | 170900100402 |
| ORWU06-0086 | Beaverton Creek | 3 | 3.00N 4.00W22 | WASHINGTON | -122.87279 | 45.51046 | ROCK CREEK/TUALATIN RIVER | 170900100403 |
| ORWU06-0059 | Willow Creek | 1 | 3.00N 2.00W 8 | WASHINGTON | -122.83898 | 45.53265 | ROCK CREEK/TUALATIN RIVER | 170900100403 |
| ORWU06-0013 | Johnston Creek | 1 | 3.00N 1.00W27 | WASHINGTON | -122.83035 | 45.48116 | ROCK CREEK/TUALATIN RIVER | 170900100403 |
| ORWU06-0077 | Tualatin River | 5 | 2.00N 3.00W26 | WASHINGTON | -122.7935 | 45.3964 | LOWER TUALATIN RIVER | 170900100501 |

| Site ID | Name | Stream Order | Township/Range | County | Longitude | Latitude | WATERSHED_ | HUC |
|---|---|---|---|---|---|---|---|---|
| ORWU06-0025 | Tualatin River | 5 | 2.00N 3.00W25 | WASHINGTON | -122.81699 | 45.3908 | LOWER TUALATIN RIVER | 170900100501 |
| ORWU06-0038 | Fanno Creek | 3 | 3.00N 2.00W35 | MULTNOMAH | -122.74137 | 45.48793 | LOWER TUALATIN RIVER | 170900100503 |
| ORWU06-0028 | Ash Creek | 1 | 2.00N 4.00W 7 | MULTNOMAH | -122.73894 | 45.46094 | LOWER TUALATIN RIVER | 170900100503 |
| ORWU06-0026 | Fanno Creek | 2 | 2.00N 5.00W 6 | MULTNOMAH | -122.72341 | 45.4868 | LOWER TUALATIN RIVER | 170900100503 |
| ORWU06-0007 | Fanno Creek | 3 | 2.00N 3.00W28 | WASHINGTON | -122.75384 | 45.40809 | LOWER TUALATIN RIVER | 170900100503 |
| ORWU06-0098 | Nyberg Creek | 1 | 1.00N 4.00W 1 | WASHINGTON | -122.7536 | 45.38089 | LOWER TUALATIN RIVER | 170900100504 |
| ORWU06-0001 | Tualatin River | 5 | 1.00N 1.00E18 | CLACKAMAS | -122.67226 | 45.34588 | LOWER TUALATIN RIVER | 170900100504 |
| ORWU06-0035 | Tickle Creek tributary near Sandy | 1 | 1.00N 3.00W23 | CLACKAMAS | -122.28533 | 45.40945 | LOWER CLACKAMAS RIVER | 170900110605 |
| ORWU06-0093 | Noyer Creek tributary Boring | 1 | 1.00N 1.00W12 | CLACKAMAS | -122.40133 | 45.42881 | LOWER CLACKAMAS RIVER | 170900110606 |
| ORWU06-0091 | Clackamas River | 5 | 1.00N 4.00W18 | CLACKAMAS | -122.52566 | 45.39434 | LOWER CLACKAMAS RIVER | 170900110607 |
| ORWU06-0042 | Rock Creek | 2 | 1.00N 3.00W 9 | CLACKAMAS | -122.49752 | 45.41954 | LOWER CLACKAMAS RIVER | 170900110607 |
| ORWU06-0072 | Crystal Springs Creek | 1 | 2.00N 5.00W10 | MULTNOMAH | -122.63505 | 45.48203 | JOHNSON CREEK | 170900120102 |
| ORWU06-0064 | Veterans Creek | 0 | 2.00N 5.00W28 | CLACKAMAS | -122.551 | 45.45982 | JOHNSON CREEK | 170900120102 |
| ORWU06-0037 | Veterans Creek | 0 | 2.00N 1.00W13 | MULTNOMAH | -122.55966 | 45.46393 | JOHNSON CREEK | 170900120102 |
| ORWU06-0085 | Mount Scott Creek | 1 | 2.00N 2.00W31 | CLACKAMAS | -122.55269 | 45.43147 | JOHNSON CREEK | 170900120103 |
| ORWU06-0032 | Kellogg Creek | 1 | 1.00N 3.00W10 | CLACKAMAS | -122.57658 | 45.40396 | JOHNSON CREEK | 170900120103 |

| Site ID | Name | Stream Order | Township/Range | County | Longitude | Latitude | WATERSHED_ | HUC |
|---|---|---|---|---|---|---|---|---|
| ORWU06-0053 | Tryon Creek tributary near SW 35 Portland | 1 | 2.00N 4.00W14 | MULTNOMAH | -122.71457 | 45.4442 | JOHNSON CREEK | 170900120104 |
| ORWU06-0008 | Miller Creek | 0 | 5.00N 2.00W26 | MULTNOMAH | -122.81681 | 45.6076 | SCAPPOOSE CREEK | 170900120201 |
| ORWU06-0075 | Coal Creek | 1 | 5.00N 2.00W19 | COLUMBIA | -122.88646 | 45.74808 | SCAPPOOSE CREEK | 170900120202 |
| ORWU06-0033 | McNulty Creek | 2 | 5.00N 2.00W 8 | COLUMBIA | -122.83142 | 45.84573 | SCAPPOOSE CREEK | 170900120205 |
| ORWU06-0096 | Columbia Slough | 1 | 3.00N 1.00W22 | MULTNOMAH | -122.54884 | 45.56502 | COLUMBIA SLOUGH/WILLAMETTE RIVER | 170900120301 |
| ORWU06-0051 | Columbia Slough near NE 82 | 1 | 3.00N 5.00W23 | MULTNOMAH | -122.57281 | 45.5679 | COLUMBIA SLOUGH/WILLAMETTE RIVER | 170900120301 |
| ORWU06-0045 | Fairview Creek | 1 | 2.00N 1.00W 5 | MULTNOMAH | -122.44688 | 45.53053 | COLUMBIA SLOUGH/WILLAMETTE RIVER | 170900120301 |
| ORWU06-0015 | Columbia Slough | 1 | 4.00N 1.00W30 | MULTNOMAH | -122.67962 | 45.58818 | COLUMBIA SLOUGH/WILLAMETTE RIVER | 170900120301 |
| ORWU06-0004 | Columbia Slough | 1 | 4.00N 3.00W35 | MULTNOMAH | -122.643 | 45.58826 | COLUMBIA SLOUGH/WILLAMETTE RIVER | 170900120301 |
| ORWU06-0034 | Willamette River | 9 | 3.00N 4.00W15 | MULTNOMAH | -122.71241 | 45.55563 | COLUMBIA SLOUGH/WILLAMETTE RIVER | 170900120302 |
| ORWU06-0019 | Willamette River tributary 0.3 RM north of Selwood Bridge Portland | 1 | 2.00N 3.00W 8 | MULTNOMAH | -122.67959 | 45.46866 | COLUMBIA SLOUGH/WILLAMETTE RIVER | 170900120302 |
| ORWL06-0016 | Middle Fork Willamette River | 4 | 23.00S 3.00E 9 | LANE | -122.45417 | 43.5914 | HILLS CREEK RESERVOIR | 170900010502 |
| ORWL06-0033 | Middle Fork Willamette River | 4 | 21.00S 3.00E21 | LANE | -122.4615 | 43.73861 | HILLS CREEK RESERVOIR | 170900010505 |

| Site ID | Name | Stream Order | Township/Range | County | Longitude | Latitude | WATERSHED_ | HUC |
|---|---|---|---|---|---|---|---|---|
| ORWL06-0044 | North Fork Middle Fork Willamette River | 4 | 20.00S 3.00E28 | LANE | -122.4517 | 43.79776 | NORTH FORK OF MIDDLE FORK WILLAMETTE RIVER | 170900010608 |
| ORWL06-0019 | Middle Fork Willamette River | 5 | 19.00S 1.00W13 | LANE | -122.74827 | 43.91351 | MIDDLE FORK WILLAMETTE/LOOKOUT POINT | 170900010701 |
| ORWL06-0007 | Row River | 5 | 20.00S 3.00W35 | LANE | -123.0243 | 43.79046 | ROW RIVER | 170900020105 |
| ORWL06-0020 | Coast Fork Willamette River | 4 | 22.00S 3.00W32 | LANE | -123.08058 | 43.60755 | UPPER COAST FORK WILLAMETTE RIVER | 170900020303 |
| ORWL06-0001 | Long Tom River | 5 | 17.00S 5.00W 4 | LANE | -123.30022 | 44.11834 | LONG TOM RIVER | 170900030109 |
| ORWL06-0015 | Long Tom River | 5 | 16.00S 5.00W 3 | LANE | -123.27462 | 44.20695 | LONG TOM RIVER | 170900030109 |
| ORWL06-0030 | Muddy Creek | 4 | 13.00S 4.00W 5 | LINN | -123.19727 | 44.4662 | MUDDY CREEK | 170900030208 |
| ORWL06-0011 | Muddy Creek | 4 | 12.00S 4.00W20 | LINN | -123.19369 | 44.51417 | MUDDY CREEK | 170900030208 |
| ORWL06-0049 | Willamette River | 7 | 11.00S 4.00W28 | BENTON | -123.18391 | 44.58882 | MUDDY CREEK | 170900030209 |
| ORWL06-0039 | Calapooia River | 4 | 12.00S 4.00W 3 | LINN | -123.1519 | 44.55017 | OAK CREEK | 170900030403 |
| ORWL06-0018 | Willamette River | 7 | 10.00S 3.00W30 | LINN | -123.10239 | 44.67561 | OAK CREEK | 170900030405 |
| ORWL06-0027 | Luckiamute River | 4 | 9.00S 6.00W26 | POLK | -123.37795 | 44.75991 | LUCKIAMUTE RIVER | 170900030605 |
| ORWL06-0041 | Luckiamute River | 4 | 9.00S 5.00W16 | POLK | -123.30254 | 44.78244 | LUCKIAMUTE RIVER | 170900030605 |
| ORWL06-0026 | Horse Creek | 4 | 16.00S 6.00E28 | LANE | -122.08434 | 44.15512 | HORSE CREEK | 170900040205 |
| ORWL06-0047 | Blue River | 4 | 16.00S 4.00E13 | LANE | -122.27813 | 44.18085 | BLUE RIVER | 170900040403 |

| Site ID | Name | Stream Order | Township/Range | County | Longitude | Latitude | WATERSHED_ | HUC |
|---|---|---|---|---|---|---|---|---|
| ORWL06-0045 | McKenzie River | 5 | 17.00S 1.00E10 | LANE | -122.66755 | 44.1074 | LOWER MCKENZIE RIVER | 170900040703 |
| ORWL06-0042 | North Santiam River | 4 | 10.00S 6.00E24 | MARION | -122.01469 | 44.68992 | UPPER NORTH SANTIAM RIVER | 170900050107 |
| ORWL06-0005 | Breitenbush River | 4 | 9.00S 6.00E23 | MARION | -122.04472 | 44.78256 | NORTH FORK BREITENBUSH RIVER | 170900050204 |
| ORWL06-0043 | North Santiam River | 5 | 9.00S 1.00W21 | LINN | -122.81901 | 44.77789 | LOWER NORTH SANTIAM RIVER | 170900050602 |
| ORWL06-0024 | North Santiam River | 5 | 10.00S 2.00W8 | MARION | -122.95296 | 44.72031 | LOWER NORTH SANTIAM RIVER | 170900050603 |
| ORWL06-0032 | South Santiam River | 5 | 13.00S 1.00W25 | LINN | -122.75056 | 44.4068 | HAMILTON CREEK/SOUTH SANTIAM RIVER | 170900060101 |
| ORWL06-0048 | South Santiam River | 5 | 12.00S 2.00W12 | LINN | -122.88584 | 44.54697 | HAMILTON CREEK/SOUTH SANTIAM RIVER | 170900060105 |
| ORWL06-0046 | South Santiam River | 5 | 11.00S 2.00W25 | LINN | -122.87534 | 44.5829 | HAMILTON CREEK/SOUTH SANTIAM RIVER | 170900060105 |
| ORWL06-0022 | Crabtree Creek | 4 | 11.00S 1.00E21 | LINN | -122.68866 | 44.60019 | CRABTREE CREEK | 170900060202 |
| ORWL06-0035 | Crabtree Creek | 4 | 11.00S 2.00E30 | LINN | -122.61545 | 44.58361 | CRABTREE CREEK | 170900060202 |
| ORWL06-0034 | South Santiam River | 4 | 13.00S 2.00E36 | LINN | -122.50941 | 44.39147 | SOUTH SANTIAM RIVER | 170900060701 |
| ORWL06-0013 |  | 4 | 13.00S 2.00E17 | LINN | -122.59218 | 44.43639 | SOUTH SANTIAM RIVER | 170900060702 |
| ORWL06-0023 | Willamette River | 8 | 5.00S 3.00W1 | MARION | -123.00605 | 45.16993 | WILLAMETTE RIVER/CHEHALEM CREEK | 170900070304 |
| ORWL06-0014 | Willamina Creek | 4 | 5.00S 7.00W36 | YAMHILL | -123.50028 | 45.099 | WILLAMINA CREEK | 170900080204 |

| Site ID | Name | Stream Order | Township/Range | County | Longitude | Latitude | WATERSHED_ | HUC |
|---|---|---|---|---|---|---|---|---|
| ORWL06-0029 | North Yamhill River | 4 | 3.00S 4.00W 5 | YAMHILL | -123.20159 | 45.33272 | NORTH YAMHILL RIVER | 170900080604 |
| ORWL06-0040 | North Yamhill River | 5 | 4.00S 4.00W11 | YAMHILL | -123.15459 | 45.23189 | NORTH YAMHILL RIVER | 170900080608 |
| ORWL06-0012 | Yamhill River | 6 | 4.00S 4.00W14 | YAMHILL | -123.13529 | 45.2254 | YAMHILL RIVER | 170900080702 |
| ORWL06-0003 | South Yamhill River | 5 | 5.00S 4.00W 4 | YAMHILL | -123.19172 | 45.16828 | YAMHILL RIVER | 170900080703 |
| ORWL06-0017 | Silver Creek | 4 | 6.00S 1.00W34 | MARION | -122.79158 | 45.00967 | ABIQUA CREEK/PUDDING RIVER | 170900090105 |
| ORWL06-0010 | Pudding River | 5 | 6.00S 1.00W 8 | MARION | -122.83873 | 45.06369 | ABIQUA CREEK/PUDDING RIVER | 170900090110 |
| ORWL06-0025 | Pudding River | 5 | 6.00S 1.00W 8 | MARION | -122.83978 | 45.06884 | ABIQUA CREEK/PUDDING RIVER | 170900090110 |
| ORWL06-0037 | Pudding River | 5 | 5.00S 1.00W10 | MARION | -122.78564 | 45.15601 | BUTTE CREEK/PUDDING RIVER | 170900090204 |
| ORWL06-0038 | Pudding River | 5 | 5.00S 1.00W21 | MARION | -122.81994 | 45.11638 | BUTTE CREEK/PUDDING RIVER | 170900090204 |
| ORWL06-0028 | Pudding River | 5 | 3.00S 1.00E30 | CLACKAMAS | -122.73081 | 45.27401 | SENECAL CREEK/MILL CREEK | 170900090402 |
| ORWL06-0009 | Molalla River | 4 | 6.00S 3.00E 7 | CLACKAMAS | -122.48754 | 45.067 | UPPER MOLALLA RIVER | 170900090504 |
| ORWL06-0002 | Dairy Creek | 5 | 1.00S 3.00W 1 | WASHINGTON | -123.00422 | 45.50592 | DAIRY CREEK | 170900100108 |
| ORWL06-0036 | Tualatin River | 5 | 2.00S 1.00W16 | WASHINGTON | -122.81699 | 45.3908 | LOWER TUALATIN RIVER | 170900100501 |
| ORWL06-0006 | Tualatin River | 5 | 3.00S 1.00E 3 | CLACKAMAS | -122.67226 | 45.34588 | LOWER TUALATIN RIVER | 170900100504 |
| ORWL06-0008 | Clackamas River | 4 | 6.00S 7.00E18 | CLACKAMAS | -121.99284 | 45.01944 | UPPER CLACKAMAS RIVER | 170900110205 |
| ORWL06-0004 | Clackamas River | 5 | 5.00S 6.00E 8 | CLACKAMAS | -122.0969 | 45.14808 | MIDDLE CLACKAMAS RIVER | 170900110401 |

| Site ID | Name | Stream Order | Township/Range | County | Longitude | Latitude | WATERSHED_ | HUC |
|---|---|---|---|---|---|---|---|---|
| ORWL06-0031 | Clackamas River | 5 | 5.00S 5.00E 2 | CLACKAMAS | -122.15596 | 45.16622 | MIDDLE CLACKAMAS RIVER | 170900110406 |
| ORWL06-0021 | Eagle Creek | 4 | 3.00S 4.00E 6 | CLACKAMAS | -122.35556 | 45.34497 | EAGLE CREEK | 170900110503 |
| ORWL06-0050 | Willamette River | 9 | 1.00N 1.00E20 | MULTNOMAH | -122.71241 | 45.55563 | COLUMBIA SLOUGH/WILLAMETTE RIVER | 170900120302 |

**Attachment A: Examples of salmonid take from monitoring studies using equipment and collection methods similar to what will be used in proposed monitoring work. These surveys were not conducted by DEQ. Highlighted sites are in the Willamette basin.**

| Site ID | Stream Name | County | Stream Order | Collection Date | Year | Abund. |
|---|---|---|---|---|---|---|
| RAINBOW TROUT: EPA Oregon Rivers Survey 1998 | | | | | | |
| ORRV98-181 | WILLAMETTE R. | BENTON | 6 | 13-Aug-98 | 1998 | 1 |
| ORRV98-161 | UMPQUA R. | DOUGLAS | 5 | 10-Sep-98 | 1998 | 2 |
| ORRV98-103 | ROGUE R. | JOSEPHINE | 5 | 26-Aug-98 | 1998 | 2 |
| ORRV98-003 | NEHALEM R. | COLUMBIA | 4 | 07-Jul-98 | 1998 | 2 |
| ORRV98-191 | ALSEA R. | BENTON | 4 | 19-Aug-98 | 1998 | 3 |
| ORRV98-113 | UMPQUA R. | DOUGLAS | 4 | 17-Sep-98 | 1998 | 3 |
| ORRV98-175 | N. SANTIAM R. | LINN | 9 | 23-Jul-98 | 1998 | 7 |
| ORRV98-133 | M.FK. WILLAMETTE R | LANE | 5 | 11-Aug-98 | 1998 | 7 |
| ORRV98-193 | M.FK. WILLAMETTE R | LANE | 6 | 29-Jul-98 | 1998 | 13 |
| ORRV98-179 | S. SANTIAM R. | LINN | 5 | 24-Jul-98 | 1998 | 19 |
| ORRV98-135 | M.FK. WILLAMETTE R | LANE | 5 | 12-Aug-98 | 1998 | 24 |
| ORRV98-133 | M.FK. WILLAMETTE R | LANE | 5 | 01-Sep-98 | 1998 | 30 |
| ORRV98-179 | S. SANTIAM R. | LINN | 5 | 21-Sep-98 | 1998 | 33 |
| ORRV98-029 | DESCHUTES R. | WASCO | 6 | 15-Sep-98 | 1998 | 40 |
| ORRV98-027 | DESCHUTES R. | WASCO | 6 | 05-Aug-98 | 1998 | 48 |
| ORRV98-029 | DESCHUTES R. | WASCO | 6 | 06-Aug-98 | 1998 | 55 |
| ORRV98-091 | ROGUE R. | JACKSON | 7 | 03-Sep-98 | 1998 | 112 |
| ORRV98-091 | ROGUE R. | JACKSON | 7 | 25-Aug-98 | 1998 | 120 |
| CHINOOK SALMON: EPA Oregon Rivers Survey 1998 | | | | | | |
| ORRV98-009 | WILLAMETTE R. | CLACKAMAS | 4 | 17-Aug-98 | 1998 | 1 |
| ORRV98-175 | N. SANTIAM R. | LINN | 9 | 23-Jul-98 | 1998 | 1 |
| ORRV98-029 | DESCHUTES R. | WASCO | 6 | 06-Aug-98 | 1998 | 2 |
| ORRV98-113 | UMPQUA R. | DOUGLAS | 4 | 17-Sep-98 | 1998 | 2 |
| ORRV98-029 | DESCHUTES R. | WASCO | 6 | 15-Sep-98 | 1998 | 2 |
| ORRV98-133 | M.FK. WILLAMETTE R | LANE | 5 | 11-Aug-98 | 1998 | 3 |
| ORRV98-179 | S. SANTIAM R. | LINN | 5 | 21-Sep-98 | 1998 | 3 |
| ORRV98-133 | M.FK. WILLAMETTE R | LANE | 5 | 01-Sep-98 | 1998 | 4 |
| ORRV98-091 | ROGUE R. | JACKSON | 7 | 03-Sep-98 | 1998 | 4 |
| ORRV98-103 | ROGUE R. | JOSEPHINE | 5 | 26-Aug-98 | 1998 | 5 |
| ORRV98-179 | S. SANTIAM R. | LINN | 5 | 24-Jul-98 | 1998 | 5 |
| ORRV98-091 | ROGUE R. | JACKSON | 7 | 25-Aug-98 | 1998 | 7 |
| ORRV98-135 | M.FK. WILLAMETTE R | LANE | 5 | 12-Aug-98 | 1998 | 9 |
| ORRV98-003 | NEHALEM R. | COLUMBIA | 4 | 07-Jul-98 | 1998 | 15 |
| ORRV98-191 | ALSEA R. | BENTON | 4 | 22-Jul-98 | 1998 | 39 |
| ORRV98-163 | TRASK R. | TILLAMOOK | 5 | 08-Jul-98 | 1998 | 124 |

**Attachment A, Continued: Examples of Salmonid take using equipment and collection methods similar to what will be used in proposed monitoring work. These surveys were not conducted by DEQ. Highlighted sites are in the Willamette basin.**

| Site ID | Stream Name | County | Stream Order | Collection Date | Year | Abund. |
|---|---|---|---|---|---|---|
| CHUM SALMON Western EMAP 2000-2003 | | | | | | |
| WORP99-0737 | DESCHUTES R | DESCHUTES | 4 | 24-Aug-01 | 2001 | 4 |
| RAINBOW TROUT: Western EMAP 2000-2003 | | | | | | |
| WORP99-0514 | SYCAN R | KLAMATH | 4 | 16-Aug-00 | 2000 | 2 |
| WORP99-0521 | DESCHUTES R | DESCHUTES | 4 | 14-Sep-00 | 2000 | 43 |
| WORP99-0523 | DIXIE CR | BAKER | 4 | 15-Aug-00 | 2000 | 16 |
| WORP99-0617 | BAKEOVEN CR | WASCO | 4 | 15-Aug-00 | 2000 | 195 |
| WORP99-0630 | COTTONWOOD CR | GRANT | 4 | 08-Aug-00 | 2000 | 1 |
| WORP99-0632 | JOHN DAY R | GRANT | 6 | 10-Jun-03 | 2003 | 6 |
| WORP99-0816 | SANDY R | MULTNOMAH | 5 | 25-Jul-02 | 2002 | 6 |
| WORP99-0731 | JOHN DAY R- N FK | GRANT | 6 | 26-Jun-02 | 2002 | 6 |
| WORP99-0742 | SPRAGUE R | KLAMATH | 6 | 05-Jun-02 | 2002 | 3 |
| WORP99-0887 | ROGUE R | CURRY | 5 | 02-Aug-02 | 2002 | 36 |
| WORP99-0950 | SIUSLAW R | LANE | 4 | 28-May-03 | 2003 | 1 |
| WORP99-0959 | PUDDING R | CLACKAMAS | 5 | 30-May-03 | 2003 | 2 |
| WORP99-0973 | JOHN DAY R- M FK | GRANT | 5 | 11-Jun-03 | 2003 | 28 |
| WORP99-0737 | DESCHUTES R | DESCHUTES | 4 | 24-Aug-01 | 2001 | 107 |
| WORP99-0852 | LONG ROCK CR | GILLIAM | 4 | 09-Jul-02 | 2002 | 64 |
| WORP99-0671 | ROGUE R | CURRY | 5 | 15-Aug-01 | 2001 | 4 |
| WORP99-0708 | JOHN DAY R- N FK | GRANT | 6 | 07-Jun-01 | 2001 | 3 |
| CHINOOK SALMON: Western EMAP 2000-2003 | | | | | | |
| WORP99-0632 | JOHN DAY R | GRANT | 6 | 10-Jun-03 | 2003 | 2 |
| WORP99-0671 | ROGUE R | CURRY | 5 | 15-Aug-01 | 2001 | 12 |
| WORP99-0816 | SANDY R | MULTNOMAH | 5 | 25-Jul-02 | 2002 | 22 |
| WORP99-0731 | JOHN DAY R- N FK | GRANT | 6 | 26-Jun-02 | 2002 | 1 |
| WORP99-0887 | ROGUE R | CURRY | 5 | 02-Aug-02 | 2002 | 16 |
| WORP99-0950 | SIUSLAW R | LANE | 4 | 28-May-03 | 2003 | 14 |
| WORP99-0959 | PUDDING R | CLACKAMAS | 5 | 30-May-03 | 2003 | 2 |
| WORP99-0708 | JOHN DAY R- N FK | GRANT | 6 | 07-Jun-01 | 2001 | 4 |